

This listing of claims will replace all prior versions and listings of claims in the application.

COMPLETE LISTING OF CLAIMS:

Claims 1-12 : (Canceled)

Claim 13 : (New) A Raman amplifier for amplifying wavelength division multiplexing (WDM) radiation propagating along an optical fiber, the WDM radiation including a plurality of radiation components each having a selected waveband and power, the amplifier comprising:

a) a plurality of optical radiation generating means operable for generating pump radiation of a selected wavelength and power, the pump radiation being coupled into the fiber to optically amplify the WDM radiation, the optical radiation generating means being wavelength tuneable; and

b) means for measuring the power of the radiation components of the WDM radiation after propagation along the fiber and after amplification to generate measured powers, the wavelength and the power of the optical radiation generating means being controlled in dependence upon the measured powers such as to make the measured powers substantially equal in magnitude and of a selected magnitude.

Claim 14 : (New) The amplifier according to claim 13, in which the means for measuring the power of the radiation components is operable to measure the power of all the radiation components comprising the WDM radiation.

Claim 15 : (New) The amplifier according to claim 13, in which the means for measuring the power of the radiation components is operable to measure an average power over a number of the radiation components for at least two groupings of the radiation components, and in which the wavelength and the power of the optical radiation generating means are controlled in dependence upon the average powers such as to make the average powers measured by the measuring means substantially equal in magnitude.

Claim 16 : (New) The amplifier according to claim 13, in which the means for measuring the power of the radiation components includes a wavelength selective component for spatially separating the WDM radiation into the radiation components.

Claim 17 : (New) The amplifier according to claim 16, in which the wavelength selective component comprises a diffraction grating.

Claim 18 : (New) The amplifier according to claim 16, in which the wavelength selective component comprises an arrayed waveguide device.

Claim 19 : (New) The amplifier according to claim 13, in which each optical radiation generating means comprises a plurality of radiation sources each being operable for generating radiation having the same wavelength but with a different state of polarization.

Claim 20 : (New) The amplifier according to claim 19, and comprising three radiation sources operable for generating radiation whose state of polarization is shifted by 60° to each other.

Claim 21 : (New) The amplifier according to claim 20, and further comprising a polarization maintaining multiplexer for combining the radiation from the radiation sources.

Claim 22 : (New) The amplifier according to claim 13, in which the radiation generating means comprises a wavelength tuneable laser.

Claim 23 : (New) The amplifier according to claim 13, in which the WDM radiation is C-band, and comprising at least two optical radiation generating means operating at selected wavelengths.

Claim 24 : (New) The amplifier according to claim 13, in which the WDM radiation is L-band, and comprising at least three optical radiation generating means operating at selected wavelengths.